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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,011	01/02/2001	Sundar Narayanan	10200/88	1275
43320	7590	05/16/2005	EXAMINER	
EVAN LAW GROUP LLC 566 WEST ADAMS, SUITE 350 CHICAGO, IL 60661			MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/753,011

Applicant(s)

NARAYANAN, SUNDAR

Examiner

James M. Mitchell

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-11, 14-19 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-11 and 23 is/are allowed.
- 6) ☒ Claim(s) 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the request for reconsideration filed January 31, 2005.

Response to Amendment

2. Applicant's request for reconsideration of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Gibson et al. (U.S. 6,680,542).
5. Gibson (Fig. 1-3, 6, 7) discloses (cl. 14) a method of forming a semiconductor device structure, comprising: removing a first nitride layer (i.e. using etch process for trench, 210, shown Fig.1-3 140; Fig. 7) and a first sacrificial (135), wherein a first oxide layer (715) is on a substrate (723,725), said first sacrificial layer (135) is on said first oxide (715), and first nitride (140; Fig. 7) is on said first sacrificial layer wherein a second sacrificial layer (130) is between said first sacrificial layer and said first oxide

layer, further comprising removing said second sacrificial layer, and wherein said first sacrificial layer comprises silicon oxide, said second sacrificial layer comprises silicon nitride, said isolation region comprises an oxide, and said substrate comprises silicon layer (i.e. using etch process for trench, 210, shown Fig.1-3 140; Fig. 7).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al. (U.S. 6,68, 542).

8. The prior art discloses the elements stated in paragraph 6, but does not disclose the claimed thickness of the nitride and oxide layers.

9. In any case since the claimed thickness are obvious since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

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10. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al. (U.S. 6,68, 542) as applied to claim 1 and further in combination with Lee et al. (U.S. 6,504,193).
11. Gibson further discloses a semiconductor device comprising source and drain regions (733, 735), but does not show ion implantation through the oxide layers.
12. Lee (Fig 1b) shows ion implantation (17) through the oxide layers (15).
13. It would have been obvious to one of ordinary skill in the art to incorporate ion implantation as taught by Lee through an oxide on the substrate of Gibson, in order to form the source and drain regions required by Gibson (733, 735).

Allowable Subject Matter

14. Claims 3-11 and 23 are allowed.
15. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose a method of forming isolation regions in a semiconductor substrate with a silicon dioxide, first sacrificial nitride layer formed on an oxide layer on a substrate and a nitride, second sacrificial formed in between the oxide and the substrate including all the limitations of the independent claim.
16. Most notably the use of a nitride film is conventionally used as an etch mask/stop formed over oxide layers to form isolation regions as illustrated for example in Rogers (U.S. 4,656,497). However in those instances where an oxide was formed serving as an etch stop/mask on top of multilayer stack to form isolation regions as shown in Parekh (U.S. 6,174,785), the prior art failed to disclose or make obvious the use of

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Silicon dioxide layer on an oxide layer with a nitride layer between the oxide layer and substrate.

Response to Arguments

17. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art in Copper discloses a multi-stack layer forming an isolation region comprising a first and second nitride layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
April 19, 2005


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800